Shigellosis

Overview[1,2]

For a complete description of shigellosis, refer to the following texts:

- Control of Communicable Diseases Manual (CCDM).
- Red Book, Report of the Committee on Infectious Diseases.

Case Definition[3]

Clinical description
An illness of variable severity characterized by diarrhea, fever, nausea, cramps, and tenesmus (ineffectual and painful straining at stool). Asymptomatic infections may occur.

Laboratory Criteria for Diagnosis:
Isolation of *Shigella* from a clinical specimen.

Case Classification:
Confirmed: a case that is laboratory confirmed.
Probable: a clinically compatible case that is epidemiologically linked to a confirmed case.

Comment: *Shigella dysentariae*, while rare in Missouri, is an extremely serious illness with case-fatality rates that may go as high as 20% despite hospitalized treatment. If a case of *Shigella dysentariae*, is reported, **contact the Regional Communicable Disease Coordinator immediately.**

Information Needed for Investigation

- **Verify the diagnosis**. What laboratory tests were conducted and what were the results?
- **When investigating gastrointestinal illness of unknown etiology,** see the "Outbreaks of Acute Gastroenteritis" Section.
- **Establish the extent of illness**. Determine if household or other close contacts are, or have been ill, by contacting the health care provider, patient or family member.
- **Contact the Regional Communicable Disease Coordinator,** if an outbreak is suspected, or if cases are in high-risk settings or jobs such as food handlers, child care, or health care.
- **Contact the Bureau of Child Care,** if cases are associated with a child care facility.

Case/Contact Follow Up And Control Measures

Determine the source of infection to prevent other cases:

- Does the case or a member of the case's household attend a child care center or nursery school?
- Does the case or a member of the case's household work as a foodhandler or healthcare provider?
- Identify symptomatic household and other close contacts and obtain stool specimens.
- Has the case traveled to an area where shigellosis is known to be endemic or where there is a known outbreak occurring?
- Have there been other cases linked by time, place or person?
- Does the case engage in sexual or other practices that would put them or others at increased risk?

Control Measures

See the Shigellosis section of the Control of Communicable Diseases Manual (CCDM), "Control of patient, contacts, and the immediate environment".

See the *Shigella* Infections section of the Red Book.

General:

- The single most important control measure is proper handwashing.
- *Shigella sp.* are frequently resistant to antibiotics. Antibiotic sensitivity, while not performed by the State Public Health Laboratory (SPHL), is routinely available through commercial labs and is valuable when dealing with an outbreak situation.
- Cases and ill contacts of shigellosis patients should be excluded from foodhandling, the care of children or patients, and other occupations that pose significant risk of transmission until diarrhea ceases and 2 successive negative stool cultures are obtained 24 hours apart. Specimens should be obtained no sooner than 48 hours following last dose of antibiotics.(1)
- The search for unrecognized mild cases and convalescent carriers among case contacts may be unproductive in sporadic cases and seldom contributes to the control of an outbreak. Cultures of contacts should generally be confined to people employed in occupations likely to expose a large number of people, and other situations where the spread of infection is particularly likely.

Foodhandlers:

- When a foodhandler is diagnosed with *Shigella*, contact the Regional Communicable Disease Coordinator and the appropriate Environmental Public Health Specialist *immediately*.
- Cases with known (culture confirmed) *Shigella* infections or ill (symptomatic with diarrhea) contacts of shigellosis patients, should not be employed to handle food until 2 successive fecal samples are negative for *Shigella*. Specimens should be collected at least 24 hours apart, but no sooner than 48 hours following last dose of antibiotics.(1)

Child Care:

- Educating child care attendants and the children on the importance of frequent handwashing is key to preventing shigellosis.
- Because this infection is transmitted so easily and can be severe, all symptomatic persons, employees and children with Shigella infection should be excluded from the daycare setting until diarrhea has ceased and 2 stool cultures are negative for the organism. Specimens should be collected 24 hours apart and no sooner than 48 hours after the last dose of antibiotics.
- When shigellosis is identified in a child care attendee or staff member, stool specimens from other symptomatic attendees, staff members, and household contacts should be cultured.
- When two or more symptomatic cases of *Shigella* are identified in children or employees of a child care facility, contact the Regional Communicable Disease Coordinator <hyperlinks> *immediately.*
- Contact the Bureau of Child Care for the Environmental Public Health Specialist to perform an assessment of the child care facility.

Among the most difficult *Shigella* outbreaks to control are those involving groups of young children, especially those who are not yet toilet trained. To prevent spread of the infection, efforts should be made to prevent the transfer of children to other child care centers. Closure of affected child care centers may lead to placement of infected children in other centers (with subsequent transmission in those centers) and is generally counterproductive. If several persons are infected, a cohort system should be considered until two consecutive stool cultures collected at least 24 hours apart are negative.[(4)] Contact the Regional Communicable Disease Coordinator for assistance in establishing and monitoring a cohort system.

Laboratory Procedures

Specimens:

Collect specimens in Cary-Blair media using the Enteric Specimen collection kit supplied by the SPHL. Specimens should be shipped refrigerated.

Identification of *Shigella* requires collection of a fecal specimen as early in the course of the illness as possible and before antibiotic therapy begins.

Blood specimens and rectal swab specimens are not acceptable specimens for analysis by the SPHL.

Reporting Requirements

Shigella infection is a category II reportable disease and shall be reported to the local health authority or to the Missouri Department of Health and Senior Services (DHSS)

within 3 days of first knowledge or suspicion by telephone, facsimile or other rapid communication.

1. For confirmed and probable cases, complete a "Disease Case Report" (CD-1), and a "Record of Investigation of Enteric Infection" (CD-2C) revised 6/02.
2. Entry of the completed CD-1 into the MOHSIS database negates the need for the paper CD-1 to be forwarded to the Regional Health Office.
3. Send the completed secondary investigation form to the Regional Health Office.
4. All outbreaks or "suspected" outbreaks must be reported as soon as possible (by phone, fax or e-mail) to the Regional Communicable Disease Coordinator. This can be accomplished by completing the Missouri Outbreak Surveillance Report (CD-51).
5. Within 90 days from the conclusion of an outbreak, submit the final outbreak report to the Regional Communicable Disease Coordinator.

References

1. Chin, James ed. "Shigellosis (Bacillary dysentery)" Control of Communicable Diseases Manual, 17th ed. Washington, D.C.: APHA, 2000: 451-455.
2. American Academy of Pediatrics. "Shigella Infections." In: Pickering, LK, ed. 2000 Red Book: Report of the Committee on Infectious Diseases. 25th ed. Elk Grove Village, IL. 2000: 510-512.
3. Centers for Disease Control. Case Definitions for Infectious Conditions Under Public Health Surveillance. MMWR 1997; 46 (RR-10):31
4. Missouri Department of Health and Senior Services, Bureau of Child Care, Licensing Rules for Group Child Care Homes and Child Care Centers, 2002, 10-24.

Other Sources of Information

1. Dupont, Herbert L. "Shigella Species (Bacillary Dysentery)" Eds. Gerald L. Mandell, John E. Bennett, & Raphael Dolin, Principles and Practice of Infectious Diseases, 5th ed. New York: Churchill Livingstone, 2000: 2363-2368.
2. Donowitz, Leigh G., Infection Control in the Child Care Center and Preschool, 4th ed., Baltimore, MD, Williams & Wilkins, 1999: 271-273.

Websites

1. Centers for Disease Control and Prevention, Health Information, "Shigellosis" Frequently Asked Questions.
   http://www.cdc.gov/ncidod/dbmd/diseaseinfo/shigellosis_g.htm
   (29 May 2003)

2. U.S. Food & Drug Administration, Center for Food Safety & Applied Nutrition, "Foodborne Pathogenic Microorganisms and Natural Toxins Handbook", Bad Bug Book, *Shigella* spp. http://vm.cfsan.fda.gov/~MOW/chap19.html (29 May 2003)
3. Texas Department of Health. "Children's Hand Washing Helps Control Spread of Diseases at Day Care Centers"; TDH Accent on Health, 02/13/98. www.tdh.state.tx.us/news/acc0213.htm (29 May 2003)
4. Nelson P. Moyer, Ph.D. "The Elusive Epidemiology of Shigellosis," Hygienic Laboratory, The University of Iowa, Hotline Mar96-Shigellosis, Vol. 34, No. 9, pp.1-3. http://www.uhl.uiowa.edu/Publications/Hotline/1996_03/shigellosis.html (29 May 2003)